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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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| 08/943,399      | 10/03/97    | VAUGHN               | 97B055              |

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IM61/0316

EXAMINER  
BULLOCK, I

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 1764     | 9            |

DATE MAILED: 03/16/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**08/943,399**

Applicant(s)  
**Vaughn**

Examiner  
**In Suk Bullock**

Group Art Unit  
**1764**



☒ Responsive to communication(s) filed on Dec 10, 1998

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-6 and 23-40 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☒ Claim(s) 2, 4, 6, 23-27, 29, 31, 33, 35, 37, and 40 is/are allowed.

☒ Claim(s) 1, 3, 5, 28, 30, 32, 34, 36, 38, and 39 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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*Claims Pending*

Per Amendment filed 12/10/98, second claim numbered 5 through 20 has been canceled and the newly added claims 21-38 have been entered. However, the **new claims 21-38** are misnumbered. The correct numbering for the new claims **should be 23-40**. A correction has been made for the misnumbered claims 21-38 and, also, the dependency has been corrected as appropriate.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claims 1, 3, 5, 28, 30, 32, 34, 36, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 4,579,999 to Gould et al. (hereinafter "Gould") in view of U.S. 4,677,243 to Kaiser.

Gould teaches a process for converting oxygenate feedstock, such as methanol, dimethyl ether or the like, to liquid hydrocarbons. See Abstract. Specifically, Gould teaches that the oxygenate feedstock is fed to a primary stage where it is converted to lower olefins and gasoline hydrocarbons plus water by dehydration of the oxygenate feedstock in the presence of a zeolite catalyst. Liquid hydrocarbons consisting essentially of C<sub>5+</sub> gasoline range materials may be recycled to the primary stage reactor. See col. 3, lines 36-42 and col. 4, lines 9-29.

The difference between Gould and the claimed invention is that Gould employs a zeolitic catalyst whereas the claimed invention employs a non-zeolitic molecular sieve catalyst. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Gould and employed a non-zeolitic molecular sieve catalyst because Kaiser has taught that silicoaluminophosphate molecular sieve catalysts are extremely efficient catalysts for the conversion of oxygenate feedstock to light olefins and additionally have increased catalyst life over the zeolites (col. 5, lines 46-56 and col. 6, lines 22-47).

In view of the foregoing, the claims have failed to patentably distinguish over the applied art.

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***Allowable Subject Matter***

Claims 2, 4, 6, 23, 24, 25, 26, 27, 29, 31, 33, 35, 37, and 40 are allowed.

The following is an examiner's statement of reasons for allowance: No prior art was found that would have disclosed or suggested the claimed method for increasing light olefin yield during conversion of oxygenates to olefins comprising contacting an oxygenate feed in a primary reactor with a non-zeolitic molecular sieve catalyst to produce a first product comprising light olefins, separating said product into light olefins and a heavy hydrocarbon fraction, passing the heavy hydrocarbon fraction to a separate auxiliary reactor and contacting said heavy hydrocarbon fraction with a second molecular sieve catalyst to promote conversion of said heavy hydrocarbons to light olefins.

***Response to Arguments***

Applicant's arguments filed 12/10/98 have been fully considered but they are not persuasive.

Applicant argues that "Gould and Kaiser references are not combinable to derive the applicant's invention as claimed" because Gould is "primarily directed to aluminosilicate zeolitic catalysts" while Kaiser "employs only non-zeolitic molecular sieve catalysts" and, "Further, neither reference provides that these tow types of catalyst would function equivalently or that one is substitutable for the other in the Gould process." This argument is found unpersuasive because, firstly, both Gould and Kaiser are directed to oxygenated conversion process. Second, Kaiser has

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taught that silicoaluminophosphate molecular sieve catalysts are extremely efficient catalysts for the conversion of oxygenate feedstock to light olefins and additionally have increased catalyst life over the zeolites (col. 5, lines 46-56 and col. 6, lines 22-47). Thus, a skilled artisan would have found a motivation from the teaching of Kaiser to substitute zeolite catalysts employed in Gould process for SAPO catalysts because SAPO catalysts are extremely efficient catalysts for the conversion of oxygenate feedstock to light olefins and additionally have increased catalyst life over the zeolites (col. 5, lines 46-56 and col. 6, lines 22-47).

Applicant argues that "Gould teaches a two step process for converting oxygenates to gasoline and distillate and not a process that produces C<sub>2</sub>-C<sub>3</sub> olefins as claimed in the currently rejected claims." This argument is found unpersuasive because Gould does in fact teach converting oxygenates to light olefins and heavy hydrocarbons wherein the heavy hydrocarbons are recycled to the primary stage reactor (see specifically col. 4, lines 9-18). This teaching of Gould is the same process as claimed by applicant. What Gould does is to further process the light olefins to produce gasoline and distillate which is not claimed by applicant. Thus, the first stage of Gould, i.e., to produce light olefins, is the same as the instant claimed process.

In view of the foregoing, the claims have failed to patentably distinguish over the applied art.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is (703) 308-3795. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Glenn Caldarola, can be reached on (703) 305-6118. The fax phone number for this Group is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

*I. Bullock*

I.B.  
March 15, 1999

*Glenn Caldarola*  
Glenn Caldarola  
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